

CLAIMS ACCORDING TO THE PCT

1. A tribometer (1) comprising:

5       · a first support assembly (2) configured to receive  
a central test piece (3), which test piece is circularly  
cylindrical, and to drive it in rotation about its axis  
(X); and

10       · a second support assembly (4) configured to  
receive three peripheral test pieces and to enable said  
central test piece (3) to come simultaneously into  
contact with said three peripheral test pieces (9) in an  
isostatic configuration, such that while being driven in  
rotation the central test piece can rub against the  
peripheral test pieces, the second support assembly (4)  
15       comprising three support parts (10) each carrying a  
respective peripheral test piece (9), each of these three  
support parts being movable relative to the other two.

2. A tribometer according to the preceding claim,  
20       characterized by the fact that at least one of the three  
peripheral test pieces (9), and in particular all three  
of them, presents a shape selected in such a manner as to  
enable contact with the central test piece to be linear,  
in particular along a straight line segment.

25       3. A device according to either one of the two preceding  
claims, characterized by the fact that at least one of  
the three peripheral test pieces (9), and in particular  
all three of them, comprises a plane face whereby it rubs  
30       against the central test piece.

4. A tribometer according to the preceding claim,  
characterized by the fact that at least one of the three  
peripheral test pieces (9), and in particular all three  
35       of them, presents the form of a plate.

5. A tribometer according to any preceding claim,  
characterized by the fact that the second support  
assembly (4) is configured in such a manner that the  
contacts between the peripheral test pieces (9) and the  
5 central test piece (3) are distributed at equal angles  
around said central test piece.

6. A tribometer according to any preceding claim,  
characterized by the fact that the three support parts  
10 (10) are configured to form a cavity (12) suitable for  
containing a fluid, in particular a lubricant, the  
central and peripheral test pieces extending at least in  
part in said cavity such that the contacts between the  
central test piece and the peripheral test pieces are  
15 immersed at least in part in the fluid.

7. A tribometer according to the preceding claim,  
characterized by the fact that it comprises a circuit  
configured to establish circulation of the fluid in the  
20 cavity.

8. A tribometer according to any one of claims 5 to 7,  
characterized by the fact that it comprises a load-  
application device (5) configured to apply a force on at  
25 least one of the support parts, and in particular on all  
three of them.

9. A tribometer according to any preceding claim,  
characterized by the fact that the load-application  
30 device (5) comprises three pushers (20) configured to  
exert on each of the respective support parts a force  
that is substantially normal to the axis of rotation of  
the central test piece, each pusher being driven by an  
actuator (22) comprising a hinged arm (23) secured at one  
35 end to a stationary portion (25) of the tribometer, and  
at its other end to a moving drive member (27).

10. A tribometer according to the preceding claim, characterized by the fact that it comprises a load-sharing device (6) for controlling the displacement of the drive members.

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11. A tribometer according to claim 10, characterized by the fact that each drive member is secured to a drive pulley (18), and by the fact that the load-sharing device comprises a belt (35) engaged on the three drive pulleys (28), the load-sharing device being configured to exert variable tension on the belt.

12. A tribometer according to the preceding claim, characterized by the fact that the load-sharing device comprises two guide pulleys (29) for guiding the belt, each being disposed between two drive pulleys.

13. A tribometer according to claim 11 or claim 12, characterized by the fact that the load-sharing device comprises two load pulleys (32) having the two ends of the belt secured respectively thereto.

14. A tribometer according to the preceding claim, characterized by the fact that at least one of the load pulleys (32) is driven in rotation by a strip (37) secured at one end to said load pulley (32) and at its other end to a moving carriage (38).

15. A tribometer according to the preceding claim, characterized by the fact that the load-sharing device comprises a first membrane (42) configured to drive displacement of the moving carriage (38).

16. A tribometer according to the preceding claim, characterized by the fact that it comprises a pressure-regulator system configured to control the pressure of the first membrane, the system comprising, for example, a

spring having a first end suitable for being moved by a motor and a second end secured to an arm configured to act on a second flexible membrane in communication with the first.